

## Amendment

### In the claims

Please replace the originally filed claims with the claims listed below. The claims listed below are marked to show the differences from the originally filed claims.

1. (Cancelled).
2. (Previously Presented) A hardware computing machine, which will be referred to as an Effector machine, comprising:
  - (a) a collection of hardware computing elements, which will be referred to as Effectors,  
that are each communicatively coupled to at least one other Effector; and
  - (b) a machine architecture that  
adjusts how the Effectors behave, and  
adjusts how information is transmitted from one Effector to another Effector;  
wherein a subset of said Effectors receives information from a Static program.
3. Cancelled.
4. Cancelled.
5. (Previously Presented) A system comprising a computer readable medium storing  
thereon one or more instructions that constitute an input interpreter for designing  
at least

a hardware computing machine, which will be referred to as an Effector machine,  
including at least:

(a) a collection of hardware computing elements, which will be referred to  
as Effectors, that are each communicatively coupled to at least one  
other Effector, and

(b) a machine architecture that  
adjusts how the Effectors behave and  
adjusts how information is transmitted from one Effector to  
another Effector; and

the input interpreter outputs a software Effector machine, which is a design for the  
hardware Effector machine; and

wherein a subset of said Effectors receives information from a Static or Meta program,  
wherein the Meta program is a program that determines how to change the Effector  
machine's architecture as the Meta program executes.

6. (Previously presented) The system of claim 5 wherein  
the software Effector machine is a first software Effector machine,  
said input interpreter is implemented with a second Effector machine that includes at  
least a second collection of software computing elements.

7. Cancelled.

8. (Previously Presented) A system comprising:

the Effector machine of claim 37, and  
an output interpreter in addition to the Effector machine, wherein the interpreter is for  
translating firing activity of a subset of said Effectors into a desired output form.

9. (Previously presented) The system of claim 8 wherein  
the collection of hardware computing elements is a first collection of hardware  
computing elements,  
the Effector machine is a first Effector machine and said output interpreter is  
implemented with a second Effector machine that is constructed from a second  
collection of hardware computing elements, and  
the first collection of hardware elements and the second collection of hardware elements  
are different subsets of a third collection of hardware computing elements.

10. (Previously Presented) The machine of claim 37 wherein said machine is a dynamic  
machine in that one or more parameters of the Effectors are functions of time.

11. (Previously Presented) The machine of claim 10 wherein the machine is for running  
the Meta program, which changes, over time, one or more properties associated  
with one or more of said Effectors, the Meta program being a sequence of sets,  
each set being a list of values of parameters of Effectors, and each list of values  
having the parameters,  
the machine including at least a portion for receiving the Meta program and for  
converting the Meta program into input for that machine.

12. (Previously Presented) The machine of claim 37 wherein said machine architecture comprises hardware having a predetermined error tolerance limiting a range of values to which one or more parameters of the hardware are allowed to be set.

13. (Previously Presented) The machine of claim 12 wherein the hardware includes transistors configured to operate at or below a gate voltage at which the mobile charge in the transistor begins to limit the flow of current, which is called the threshold voltage.

14. (Previously Presented) A method comprising designing a machine, at least by evolving a graph representing the machine to produce a design of the machine, the machine being a hardware computing machine, which will be referred to as an

Effector machine, including at least

(a) a collection of hardware computing elements, which will be referred to as

Effectors, that are each communicatively coupled to at least one other

Effector; and

(b) a machine architecture that

adjusts how the Effectors behave and

adjusts how information is transmitted from one Effector to another

Effector;

wherein a subset of said Effectors receives information from a Static or

Meta program, wherein the Meta program is a program that

determines how to change the Effector machine's architecture as

the Meta program executes.

15. (Previously Presented) The method of claim 14 wherein the evolving of the graph includes at least performing a crossover of two representations of Effector machines via interchanging representations of modules of the two representations of Effector machines.

16. (Previously Presented) The method of claim 14 wherein the evolving of the graph is for changing the following properties:

a number of software modules per software machine,

a number of software Effectors per software module,

one or more refractory periods associated with one or more software Effectors,

one or more thresholds associated with one or more software Effectors,

a number of software connections,

one or more amplitudes associated with two or more software Effectors,

one or more pulse widths associated with two or more software Effectors, and

one or more conduction times associated with two or more software Effectors.

17. (Cancelled)

18. (Previously Presented) The method of claim 23 wherein a subset of said Effectors, called Input Effectors, are for receiving information from an external environment.

19. Cancelled.

20. Cancelled.

21. (Previously Presented) The method of claim 23 further comprising designing the Effector machine via an input interpreter.

22. Cancelled.

23. (Currently Amended) A method, comprising: providing a hardware computing machine, which will be called an Effector machine, by at least

(a) providing a collection of hardware computing elements, which will be referred to as Effectors,

(b) communicatively coupling each Effector of the collection to at least one other Effector;

(c) providing a machine architecture that, while the machine is running, adjusts how Effectors behave, and

adjusts how information is transmitted from one Effector to another Effector;

the method further comprising designing said machine architecture by at least evolving a graph associated with the machine architecture;

wherein a subset of said Effectors receives information from a Static or Meta

program, wherein the Meta program is a program that determines how to change the Effector machine's architecture as the Meta program executes.

24. (Previously Presented) The method of claim 26, further comprising configuring a subset of said Effectors, called Output Effectors, for translating at least one firing activity of the Output Effectors into a desired output form.

25. (Previously Presented) The method of claim 24 wherein  
the collection of hardware computing elements is a first collection of hardware  
computing elements,  
the Effector machine is a first Effector machine and the translating is performed via an  
output interpreter that is implemented with a second Effector machine that is  
constructed from a second collection of hardware computing elements, and  
the first collection of hardware elements and the second collection of hardware elements  
are different subsets of a third collection of hardware computing elements.

26. (Previously Presented) The method of claim 23 wherein the machine architecture and Effectors are part of a dynamic machine in which parameters of the Effectors are functions of time.

27. (Previously Presented) The method of claim 26, wherein the dynamic machine is for running a Meta program, which changes, over time, one or more properties associated with one or more of the Effectors, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors, and each list of values having the parameters in a set order, the machine including at least a portion for receiving the Meta program and converting the Meta program into input for the machine.

28. (Previously Presented) The method of claim 23, further comprising designing said machine architecture to limit values to which one or more parameters are allowed to be set, based on an error tolerance.

29. (Previously Presented) The method of claim 28 wherein said designing includes at least configuring transistors to operate at subthreshold based on the error tolerance limiting a range of values that at least one parameter of the Effectors is allowed to be set, operating at subthreshold refers to operating below a gate voltage at which the mobile charge in the transistor begins to limit the flow of current, which is called the threshold voltage.

30. Cancelled.

31. (Previously Presented) The method of claim 23 further comprising crossing over representations of modules of Effector machines between two representations of Effector machines associated with the graph.

32. (Previously Presented) The method of claim 23 wherein evolving the graph includes at least changing one or more of the following properties associated with at least a portion of a representation of the machine: a number of software modules per software machine, a number of software Effectors per software module, a refractory period associated with at least one of the software Effectors, a threshold associated with a



software Effector, a number of software connections between the software Effectors, an amplitude associated with one or more of the software Effectors, a pulse width associated with one or more of the software Effectors, and a conduction time between at least two of the software Effectors.

33. Cancelled.

34. (Previously Presented) The method of claim 23 further comprising designing a least one circuit that is associated with the machine by at least evolving a graph associated with the circuit.

35. (Previously Presented) The machine of claim 37 wherein a subset of said Effectors are configured to receive information from an external environment.

36. (Previously Presented) The machine of claim 37 wherein  
the collection of hardware computing elements is a first collection of hardware  
computing elements,  
the Effector machine is a first Effector machine,  
a subset of said Effectors are configured to receive information from a second Effector  
machine that is constructed from a second collection of hardware computing  
elements, and  
the first collection of hardware elements and the second collection of hardware elements  
are different subsets of a third collection of hardware computing elements.

37. (Previously Presented) A hardware computing machine, which will be referred to as an Effector machine, comprising:

(a) a collection of hardware computing elements, which will be referred to as Effectors, that are each communicatively coupled to at least one other Effector; and

(b) a machine architecture that

adjusts how the Effectors behave and adjusts how information is transmitted from one Effector to another Effector; wherein a subset of said Effectors receives information from a Meta program, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors.

38. (Previously Presented) The machine of claim 37 wherein the Effector machine is a first Effector machine, a subset of said Effectors are for receiving information from an external environment;

the subset of said Effectors are for being configured to receive information from a second Effector machine;

the subset of said Effectors are for being configured to receive information from a Static program;

the subset of said Effectors are for being configured to receive information from a Meta program, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors; and

the subset of said Effectors are for being configured to receive information from any combination of the external environment, the second Effector machine, Static program, and the Meta program.

39. (Previously Presented) The method of claim 14, wherein said evolving of the graph includes at least changing a number of representations of modules in a representation of the machine.

40. (Previously Presented) The method of claim 14, wherein said evolving of the graph includes at least changing a number of software Effectors per software module.

41. (Previously Presented) The method of claim 14, wherein said evolving of the graph includes at least changing one or more refractory periods associated with one or more software Effectors.

42. (Previously Presented) The method of claim 14, wherein said evolving of the graph includes at least changing one or more thresholds associated with one or more software Effectors associated with the graph.

43. (Previously Presented) The method of claim 14, wherein said evolving of the graph includes at least changing a number of software connections between two or more software Effectors.

44. (Previously Presented) The method of claim 14 wherein said evolving of the graph includes at least changing one or more representations of amplitudes associated with one or more representations of Effectors associated with the graph.

45. (Previously Presented) The method of claim 14 wherein said evolving of the graph includes at least changing one or more representations of pulse widths associated with representations of the Effectors.

46. (Previously Presented) The method of claim 14 wherein said evolving of the graph includes at least changing one or more representations of conduction times associated with representations of the Effectors.

47. (Previously Presented) The machine of claim 2, further comprising an input interpreter for designing at least the Static program for the Effector machine.

48. (Previously Presented) The machine of claim 37, further comprising an input interpreter for designing at least a Meta program for the Effector machine, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors.

49. (Previously Presented) The machine of claim 10 wherein the machine is for running a Meta program, which changes, over time, one or more properties of said machine, the Meta program being a sequence of sets, each set being a list of values of parameters of

Effectors, the machine including at least a portion for receiving the Meta program and converting the Meta program into input for that machine.

50. (Previously Presented) The method of claim 23 wherein the Effector machine is a first Effector machine and a subset of said Effectors, called Input Effectors, are for receiving information from a second Effector machine.

51. (Previously Presented) The method of claim 23 wherein the subset of said Effectors, called Input Effectors, are for receiving information from the Static program.

52. (Previously Presented) The method of claim 23 wherein the subset of said Effectors, called Input Effectors, are for receiving information from the Meta program, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors.

53. (Previously Presented) The method of claim 23 wherein the Effector machine is a first Effector machine, the subset of said Effectors, called Input Effectors, are for receiving information from an external environment;  
the Input Effectors are for receiving information from a second Effector machine;  
the Input Effectors are for receiving information from the Static program; and  
the Input Effectors are for receiving information from the Meta program, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors.

54. (Previously Presented) The method of claim 26 wherein the dynamic machine is for running the Meta program, which changes, over time, a threshold associated with one or more Effectors, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors.

55. (Previously Presented) The method of claim 26 wherein the dynamic machine is for running the Meta program, which changes, over time, a refractory period associated with one or more Effectors, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors.

56. (Previously Presented) The method of claim 26 wherein the dynamic machine is for running the Meta program, which changes, over time, a pulse amplitude associated with two or more Effectors, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors.

57. (Previously Presented) The method of claim 26 wherein the dynamic machine is for running the Meta program, which changes, over time, a pulse width associated with two or more Effectors, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors.

58. (Previously Presented) The method of claim 26 wherein the dynamic machine is for running the Meta program, which changes, over time, a transmission time associated with

two or more Effectors, the Meta program being a sequence of sets, each set being a list of values of parameters of Effectors.

59. (Previously Presented) The system of claim 8, the system being configured such that the interpreter interprets whether an Effector fires as binary information, and interprets the binary information into the desired output form, which includes at least a sequence of symbols.

60. (Cancelled).

61. (Previously Presented) A method, comprising forming a hardware computing machine by at least:

(a) providing a collection of hardware computing elements, which will be referred to as  
Effectors,

(b) providing a machine architecture that  
adjusts how Effectors behave, and  
adjusts how information is transmitted from one Effector to another Effector;

(c) communicatively coupling each Effector of the collection to at least one other  
Effector, and

(d) wherein a portion of the hardware computing machine runs a Meta program that sets  
values for one or more parameters of individual Effectors from the collections of  
Effectors, the one or more parameters including a time at which information is  
transmitted from the individual Effectors to another of the individual Effectors,

wherein the Meta program is a program that determines how to change the Effector machine's architecture as the Meta program executes.

62. (Previously Presented) A hardware computing machine, which will be referred to as an Effector machine, comprising:

- (a) a collection of hardware computing elements, which will be referred to as Effectors, each Effector of the collection being communicatively coupled to at least one other Effector;
  - (b) a machine architecture that, while the hardware computing machine is running adjusts how the Effectors behave and adjusts how information is transmitted from one Effector to another Effector; and
  - (c) the hardware computing machine including a portion running a Meta program that sets values for one or more parameters of individual Effectors from the collections of Effectors, the one or more parameters including a time at which information is transmitted from the individual Effectors to another of the individual Effectors,
- wherein the Meta program is a program that determines how to change the Effector machine's architecture as the Meta program executes.